ARS 827 (2012) (English): Sweet potato flour -- Specification

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Sweet potato flour — Specification

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Foreword

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Introduction

Sweet potato flour is obtained from the tubers of *Ipomoea batata.* It is used in puddings; bakery products, textiles and fermentation industries. Sweet potatoes of both white and yellow fleshed varieties are available. However, the white fleshed varieties are generally used for making the flour.

Sweet potato flour — Specification

1 Scope

This African Standard specifies the requirements and methods of sampling and test for flour which is obtained from the processing of sweet potato [*Ipomoea batatas* (L.) Lam.] intended for human consumption.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ARS 53, *General principles of food hygiene — Code of practice*

ARS 56, *Prepackaged foods — Labelling*

CODEX STAN 192, *General standard for food additives*

CODEX STAN 193, *Codex general standard for contaminants and toxins in food and feed*

ISO 712, *Cereals and cereal products — Determination of moisture content — Reference method*

ISO 941, *Spices and condiments — Determination of cold water-soluble extract*

ISO 1842, *Fruit and vegetable products — Determination of pH*

ISO 2171, *Cereals, pulses and by-products — Determination of ash yield by incineration*

ISO 2173, *Fruit and vegetable products — Determination of soluble solids — Refractometric method*

ISO 3588, *Spices and condiments — Determination of degree of fineness of grinding — Hand sieving method (Reference method)*

ISO 5498*, Agricultural food products — Determination of crude fibre content — General method*

ISO 6579, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Salmonella* spp.

ISO 7251, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of presumptive Escherichia coli — Most probable number technique*

ISO 13690, *Cereals, pulses and milled products — Sampling of static batches*

ISO 15914, *Animal feeding stuffs — Enzymatic determination of total starch content*

ISO 21527-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 1: Colony count technique in products with water activity greater than 0.95*

3 Definitions

For the purpose of this standard the following definitions apply.

3.1
sweet potato flour
product prepared from dried sweet potato chips or paste by a pounding, grinding or milling process, followed by sifting to separate the fibre from the flour

3.2
food grade material
material that is free from substances that are hazardous to human health and may be permitted to come in contact with food

3.3
extraneous matter
organic matter of sweet potato origin other than sweet potato flour

3.4
foreign matter
organic and inorganic materials (such as sand, soil, glass) other than extraneous matter in the flour

3.5
practically free
without defects in excess of those that can be expected to result from, and be consistent with good cultural and handling practices employed in the production and marketing of the fresh sweet potato

4 Essential quality and compositional requirements

4.1 Raw materials

The raw materials shall be fresh sweet potatoes, dried sweet potato chips, paste or crumbs made from fresh sweet potatoes conforming to the relevant African Standards.

4.2 General quality requirements for sweet potato flour

Sweet potato flour shall be:

a) in the form of a fine powder and shall be white in colour;

b) free from rancidity;

c) practically free from extraneous matter, adulterants and rodent contamination;

d) free from fermented, musty or any other objectionable odours;

e) practically free from any living insect or fungus infestation and foreign matter;

f) safe and suitable for human consumption; and

g) of colour characteristic of the variety.

It shall not contain any other added sweetening, flavouring, colouring agent or any other foreign matter.

4.3 Compositional requirements

Sweet potato flour shall conform to the requirements in Table 1 below.

Table 1 — Compositional requirements

S/N	Parameter	Requirement	Method of test
1	Total ash content, % by mass on dry matter basis, max.	3.0	ISO 2171
2	Moisture content, % by mass, max.	12.0	ISO 712
3	Crude fibre content, % by mass on a dry matter basis, max.	5.0	ISO 5498
4	Acid insoluble ash, % by mass on dry matter basis max.	0.15	Annex A
5	Total sugar content (as sucrose) % by mass, Min	6.0	ISO 2173
6	Starch (on dry basis), % by mass, Min	60.0	ISO 15914
7	pH of aqueous extract	4.5 – 7.0	ISO 1842
8	Cold water solubles (on dry basis), % by mass	12.0	ISO 941

4.4 Specific quality factors

4.4.1 Particle size

Not less than 90 % shall pass through a 600 µm sieve for fine flour and not less than 90 % shall pass through a 1200 µm sieve for coarse flour. Testing for particle size shall be done in accordance with ISO 3588.

Sweet potato flour intended for baking purposes shall have particle size of which not less than 90 % shall pass through a 250 µm sieve

5 Food additives

Food additives may be used in the preparation of sweet potato flour in accordance with CODEX STAN 192.

6 Contaminants

6.1 Pesticide residues

Sweet potato flour shall conform to maximum residue limits for pesticide residues established by the Codex Alimentarius Commission for this commodity.

6.2 Heavy metals

Sweet potatoes shall comply with those maximum levels for heavy metal contaminants established by the Codex Alimentarius Commission for this commodity.

6.3 Mycotoxin and chemical limits

Sweet potato flour shall comply with those maximum mycotoxin limits established by the Codex Alimentarius Commission for this commodity.

6.4 Other contaminants

Sweet potato flour shall comply with the maximum levels of the Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193).

7 Hygiene

Sweet potato flour shall be prepared and handled in a hygienic manner in accordance with ARS 53 and shall conform to microbiological limits specified in Table 2.

Table 2 — Microbiological limits for sweet potato flour

S/N	Micro-organism(s)	Requirement	Method of test
1	Escherichia coli, cfu/g, max.	<1	ISO 7251
2	Salmonella, 25g, max.	absent	ISO 6579
3	Yeasts and moulds, cfu/g, max.	10^4	ISO 21527-1

8 Packaging

8.1 Sweet potato flour shall be packaged in food grade material which will safeguard the hygienic, nutritional, technological and organoleptic qualities of the product.

8.2 The net weight of the packages for sweet potato flour may be required to meet the relevant regulations of the destination country.

9 Labelling

9.1 In addition to the requirements of ARS 56, the following specific labelling requirements shall apply and shall be legibly and indelibly marked:

a) common name of the product ‘sweet potato flour’;

b) name, and physical address of the manufacturer/ distributor and /or trade name/ brand name;

c) date of manufacture;

d) lot identification;

e) expiry date;

f) country of origin;

g) the net weight in metric units;

h) the statement ‘Human Food’ shall appear on the package;

i) storage instructions; and

j) instructions on disposal of used package.

9.2 When labelling non-retail packages, information for non-retail packages shall either be given on the packages or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer or packer shall appear on the packages.

10 Sampling

Sampling of sweet potato flour shall be done in accordance with ISO 13690.

11 Criteria for conformity

A lot shall be declared as conforming to this standard if samples inspected or analysed for quality requirements conform to the provisions of this standard.

Annex A
(normative)

Determination of acid insoluble ash

A.1 Reagent

A.1.1 Dilute Hydrochloric Acid — 1:1, prepared from concentrated hydrochloric acid.

A.2 Procedure

A.2.1 Weigh accurately about 2 g of the dried material in a tared porcelain, silica or platinum dish. Ignite with a meker burner for about 1 hour. Complete the Ignition by keeping in a muffle furnace at 500 °C to 570 °C until grey ash results.

Cool and filter through whatman filter paper No. 42 or its equivalent. Wash the residue with hot water until the washings are free from chlorides as tested with silver nitrate solution and return the filter paper and residue to the dish. Keep it in an electric air oven maintained at 135 ± 2 °C for about 3 hrs. Ignite the dish again for about 30 minutes, cool and weigh. Repeat this process till the difference between two successive weighings is less than 1 mg. Note the lowest weight.

A.3 Calculation

A.3.1 Acid insoluble ash, per cent by weight

$$= \frac{100(M_2 - M)}{M_1 - M}$$

where,

M_2 = the lowest weight, in g, of the dish with the acid insoluble ash;

M = weight, in g, of the empty dish; and

M_1 = weight, in g, of the dish with the dried product taken for the test.